CHEMICAL & ENGINEERING NEWS

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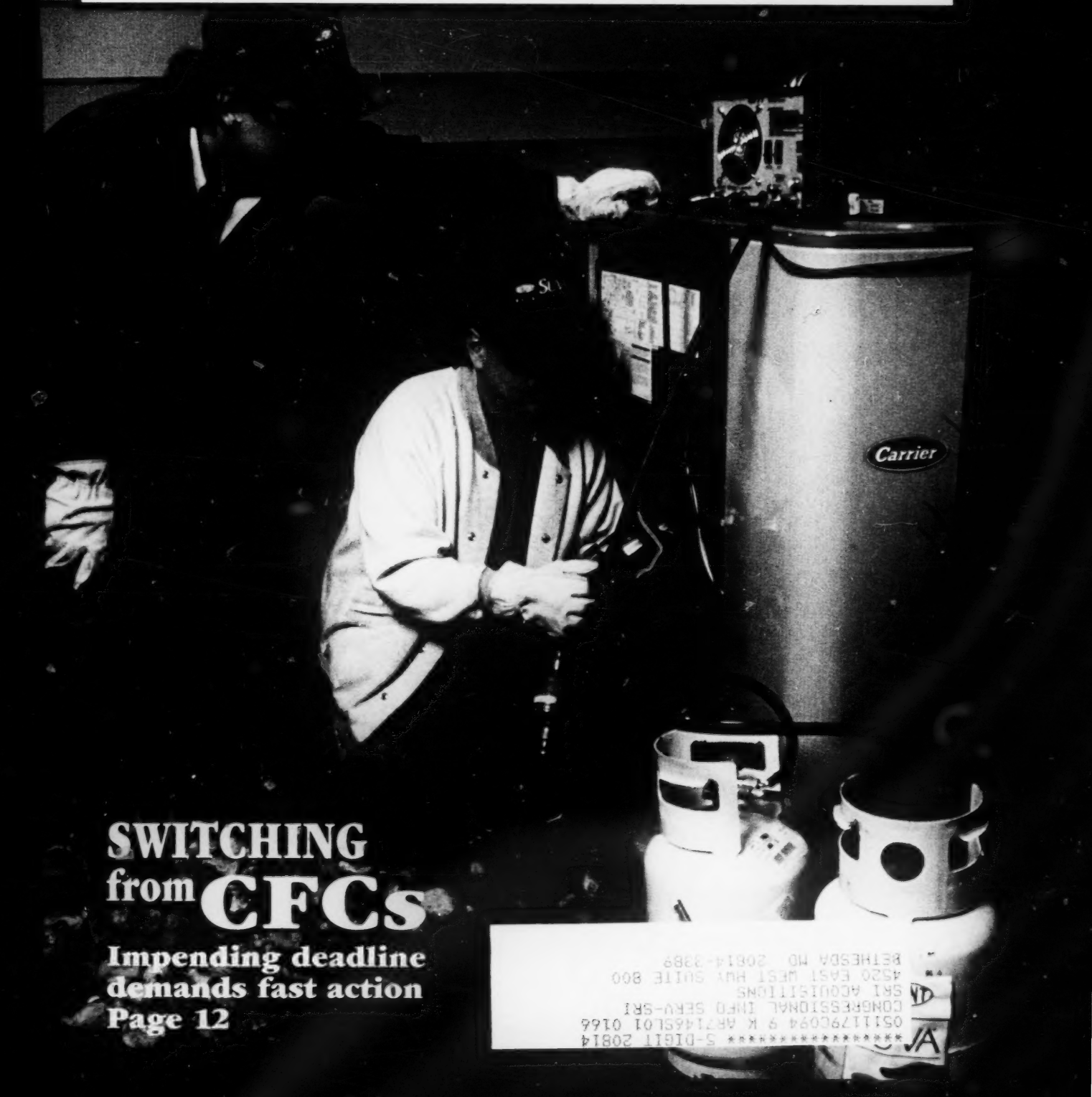
C&EN

NOVEMBER 15, 1993

CHEMICAL COMPANY EARNINGS RISE FOR SECOND STRAIGHT QUARTER PAGE 22



SWITCHING from CFCs

Impending deadline demands fast action
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CHEMICAL & ENGINEERING NEWS

C&EN

NOVEMBER 15, 1993

NEWS OF THE WEEK

- Scientific misconduct charges against AIDS researcher Robert Gallo will be dropped, sources say, after appeals board reverses charges against coworker Mikulas Popovic; but two other probes continue. **Page 8**
- FDA approves for marketing Monsanto's genetically engineered bovine somatotropin, which increases milk production in cows; opponents start vigorous campaign to prevent its use. **Page 9**
- Two research groups combine scanning tunneling microscopy with ultrafast laser optics to create tool for probing events on picosecond scale. **Page 9**
- Dutch chemical group Akzo will acquire troubled Swedish chemicals maker Nobel Industries for $1.7 billion. **Page 10**
- The original Bakelizer, used to make the first synthetic plastic, was designated as the first National Historic Chemical Landmark during a ceremony at the National Museum of American History. **Page 11**
- Huntsman continues its acquisitions aimed at diversification by agreeing to buy Monsanto's linear alkylbenzene and maleic anhydride businesses. **Page 11**

COVER: Photo courtesy of DuPont

Volume 71, Number 46
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BUSINESS

Third-quarter earnings for major U.S. chemical companies were up for the second consecutive quarter, although not as much as earnings increases for oil and drug firms. **Page 22**

Slower growth is in store for the chemical industry over the next few years as a result of many structural changes taking place in the U.S. economy as well as in foreign economies. **Page 28**

GOVERNMENT

Occupational Safety & Health Administration idles while reform measures and confirmation of administrator languish in Congress; meanwhile, industry looks for action on several fronts. **Page 52**

SCIENCE/TECHNOLOGY

Development of first synthetic receptors may lead to a new form of human gene therapy from the ability to use small molecules to control gene transcription in living cells. **Page 55**

EDUCATION

The underrepresentation of ethnic and racial minorities in science and engineering is being addressed through efforts at all levels of education and in various arenas. **Page 59**

BOOKS

"The Greenhouse Gambit: Business and Investment Responses to Climate Change" offers an understandable, clever, and integrative look at global warming. **Page 63**

NEWS FOCUS

As ban on production of ozone-depleting chemicals nears, users move to adopt substitutes while industry works toward elimination of these compounds; however, environmental groups press for immediate, chlorine-free solutions. Page 12

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LETTERS

Dismissal of technicians

Although the 1994 Employment Outlook shows the unemployment situation for chemists is one of the poorest encountered in the past few decades (C&EN, Oct. 25, page 36), the job outlook for experienced technicians is a catastrophe. With new B.S. chemists commanding a median salary of only $24,000, career technicians—usually without a degree but earning much more because of long years of pertinent experience—have become a disposable commodity in the workplace.

ACS has been active in encouraging the career development of these technicians by sponsorship of papers by these individuals at local, regional, and national meetings. Now, with a crisis brought on by a substantial difference between the alarmingly low salaries of starting B.S. chemists and career technicians, our profession has the duty to protest the dismissal of competent technicians well versed in modern techniques of chemistry and, until now, indispensable in our research laboratories. To fail to be responsive to the current difficulties of this group would be a disgrace to our profession.

I appreciate the need of corporations to remain competitive; however, the dismissal of technicians on the basis that new B.S. chemists can be employed for less than what current technicians are being paid should not be tolerated. This matter should be of concern not only to the officers of ACS, but to all members of our profession.

Nelson Marans
Silver Spring, Md.

Book review rebuttal

In his review of my book "Element of Risk: The Politics of Radon" (C&EN, Oct. 11, page 35), M. Granger Morgan's criticisms as well as praise are largely matters of opinion. But he also cites two supposed errors of fact. The first is an oversight that refers to MeV as megavolts rather than million electron volts. The second "error," however is a puzzling misconstruction of my words.

Morgan quotes my passage that "risk [from radon] is higher if exposure is at an older age," as if this were my own proposition. He claims in any case that the proposition is wrong. In fact, I state unambiguously that the observation is that of Jonathan Samet and Richard Hornung ("Element of Risk," AAAS Press, Washington, D.C., page 28). In their review article concerning studies of miners [*Risk Anal.*, **10**, 70 (1990)], they note "an increasing risk with older age at initial exposure." Morgan's dismissal of the finding is offered without support and appears unwarranted.

Morgan's lapses are especially striking in view of his professed concern about detail and accuracy. At the end of his review he is identified as involved with "issues of risk analysis and risk communication for which the technical details are of central importance." Moreover, he writes that my (alleged) inaccuracies "jar the technical reader." Throughout his review, Morgan refers to my book as "Elements of Risk" [sic].

Leonard A. Cole
Faculty Associate
Program in Science, Technology & Society
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New Brunswick

M. Granger Morgan, in his review of "Element of Risk: The Politics of Radon" (C&EN, Oct. 11, page 35), makes a brief reference to "rules of extrapolation and margins of error in other risk management decisions." This vital topic is often carefully avoided in the politics of environmental and other hazards. Readers may be referred to a commentary article in *Discover*, November 1993, by Robert Root-Bernstein entitled "Future Imperfect." In summary, he says, "Extrapolating from the past into the future is not a science but a highly fallible art."

Models on climate, global warming, ozone depletion, and epidemics, to name a few, are criticized as not sufficiently reliable for predictive extrapolations to be the basis of political actions. "Extrapolations, for the present, must remain a tool for analyzing the state of our scientific knowledge rather than a science for directing the tools of state," says Root-Bernstein.

Harold M. Kelley
Aiken, S.C.

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Chemical Company Earnings Increase For Second Straight Quarter

William J. Storck,
C&EN Northeast News Bureau

Chemical company earnings in this year's third quarter increased for the second quarter in a row. According to C&EN's quarterly survey of chemical results, earnings from continuing operations for 30 major chemical firms increased 5% from last year's third quarter, performing better than a group of diversified chemical producers, but trailing earnings growth at oil companies and pharmaceutical firms.

In the second quarter of 1993, earnings for the same group of chemical companies increased 8% from second-quarter 1992. Among these companies, Praxair, the industrial gases firm spun off from Union Carbide, has replaced Quantum Chemical, which has been acquired by Hanson plc, the U.K.-based diversified company. Prior quarterly data have been restated to reflect this change.

Also, American Cyanamid results have been "reconstructed" by including in its total figures the results of its chemical operations, which it has carried as discontinued operations until the formal spin-off of Cytec. Without this reconstruction, the inclusion of American Cyanamid would make the table less chemically pure, since Cytec is the bulk of Cyanamid's chemical operations. After Cytec's spin-off as a separate company in January, Cyanamid will be replaced in C&EN's survey because it will no longer meet the criterion—50% or more of its sales from chemicals—for inclusion on the chemical company table.

The modest earnings increase for the 30 chemical companies came in a rather lackluster chemical economy. Government data show that production of chemicals and allied products improved

Chemical industry leaders for the third quarter . . .

Sales

Rank 1993		$ Millions	Rank 1992
1	Dow Chemical	$2,988.0	1
2	Monsanto	1,849.0	2
3	American Cyanamid	1,150.9	4
4	W. R. Grace	1,136.1	5
5	Union Carbide	1,130.0	3
6	Air Products	855.5	6
7	Rohm and Haas	799.0	7
8	Arco Chemical	782.0	8
9	Hercules	676.0	9
10	Morton International	619.6	13

Earnings[a]

	$ Millions	Rank 1992
Dow Chemical	$139.0	1
Monsanto	95.0	9
Great Lakes Chemical	68.5	5
W. R. Grace	63.6	6
American Cyanamid	62.2	4
Air Products	59.6	3
Arco Chemical	55.0	2
Hercules	51.5	10
International Flavors	49.6	8
Morton International	42.9	11

Profitability

	Earnings as % of sales	Rank 1992
International Flavors	16.6%	1
Great Lakes Chemical	14.6	2
Nalco Chemical	10.9	5
Loctite	10.6	3
Betz Laboratories	10.0	4
Crompton & Knowles	8.6	9
Imcera	7.9	10
Hercules	7.6	13
Arco Chemical	7.0	6
Air Products	7.0	8

. . . and for the first nine months of 1993

Sales

Rank 1993		$ Millions	Rank 1992
1	Dow Chemical	$13,555.0	1
2	Monsanto	6,020.0	2
3	American Cyanamid	4,069.2	3
4	Union Carbide	3,567.0	4
5	W. R. Grace	3,216.4	5
6	Air Products	2,514.2	6
7	Rohm and Haas	2,509.0	8
8	Arco Chemical	2,325.0	7
9	Hercules	2,058.7	9
10	Morton International	1,848.1	13

Earnings[a]

	$ Millions	Rank 1992
Dow Chemical	$690.0	1
Monsanto	436.0	2
American Cyanamid	329.9	3
Air Products	205.7	4
Great Lakes Chemical	202.8	6
International Flavors	166.8	7
Arco Chemical	154.0	8
Hercules	150.1	10
Rohm and Haas	150.0	5
W. R. Grace	149.2	9

Profitability

	Earnings as % of sales	Rank 1992
International Flavors	18.0%	1
Great Lakes Chemical	14.9	2
Loctite	11.6	3
Betz Laboratories	10.8	4
Nalco Chemical	10.8	5
Crompton & Knowles	9.5	12
Air Products	8.2	7
Lubrizol	8.2	6
American Cyanamid	8.1	8
Imcera	7.8	10

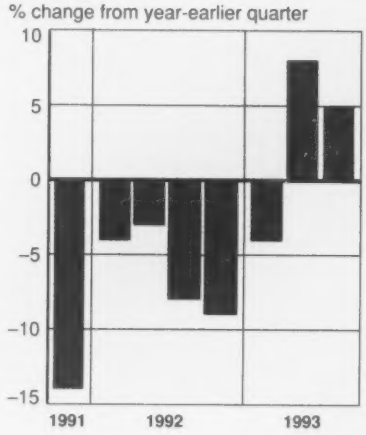
Note: Based on 30 chemical companies listed on page 24. a After taxes.

Chemical industry 1993 third-quarter results

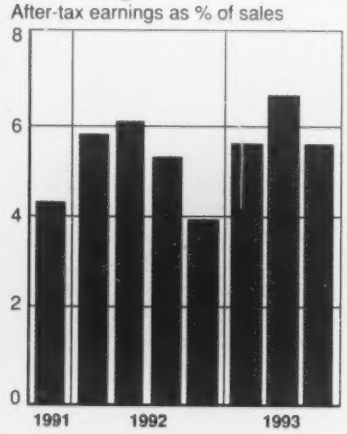
- **Sales were unchanged**
- **Earnings increased 5%**
- **Profit margin was 5.6%**
- **Production was up 3.3%**
- **Prices rose 1.3%**

Sales
% change from year-earlier quarter

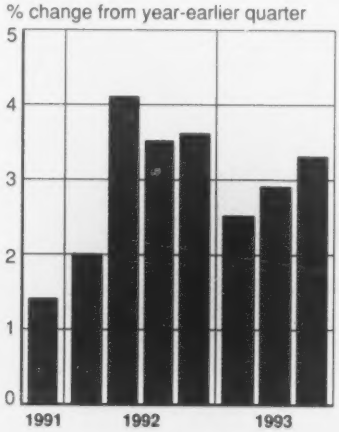
Earnings
% change from year-earlier quarter



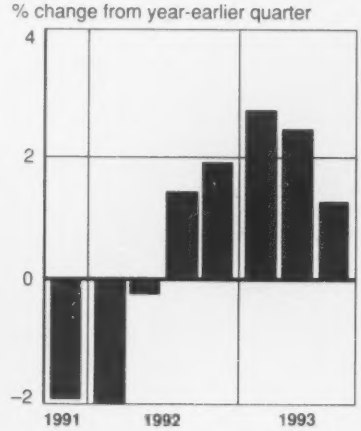
Profit margin
After-tax earnings as % of sales



Production
% change from year-earlier quarter



Prices
% change from year-earlier quarter



Note: All sales, earnings, and profit-margin data are based on 30 chemical companies listed on page 24.

about 3% during the quarter on a year-to-year basis, while prices rose only slightly more than 1%.

However, there was some good news in major chemical markets. Sales of automobiles improved, especially late in the quarter. And sales of new homes, also up late in the quarter, were well above analysts' expectations. If these two major markets for chemicals can continue to hold up, chemical industry sales and earnings likely will continue to grow.

However, countering any improvement in domestic business is the continued recession in foreign markets. Chemical companies point out that they are still being hurt by the poor economies in Europe, especially Germany, and in Japan.

The improvement in chemical company results was by no means across the board. Of the 30 companies surveyed, 11 still reported earnings declines from year-earlier results. And although earnings were up for the total group, sales did not show any growth from last year's quarter.

In the third quarter, sales for the 30 companies totaled $18.6 billion, virtually unchanged from the same period a year earlier. And the earnings increase brought total earnings from operations, excluding unusual items, to about $1.04 billion. The result was an increase in the aggregate profit margin—earnings as a percent of sales—for the group to 5.6%; in last year's third quarter this measure stood at 5.3%.

The increase in chemical company earnings was bested both by drug firms and by oil companies that produce chemicals. For the 10 pharmaceutical companies surveyed by C&EN, third-quarter earnings increased 29% to $3.28 billion on a 3% sales decline to $18.7 billion. The result was an increase in the aggregate profit margin for these companies to 17.5% from 13.1% in the comparable period last year.

For 11 oil companies, earnings in-

Third-quarter earnings increase 5% at major chemical companies to $1.04 billion

	THIRD-QUARTER 1993						NINE-MONTHS 1993			
	Sales	Earnings[a]	Change from 1992		Profit margin[b]		Sales	Earnings[a]	Change from 1992	
	($ millions)		Sales	Earnings	1993	1992	($ millions)		Sales	Earnings
Air Products	$ 855.5	$ 59.6	2%	–8%	7.0%	7.7%	$ 2,514.2	$ 205.7	2%	0%
American Cyanamid[c]	1,150.9	62.2	–4	2	5.4	5.1	4,069.2	329.9	0	2
Arco Chemical	782.0	55.0	–1	–26	7.0	9.4	2,325.0	154.0	0	–26
Betz Laboratories	176.5	17.6	–3	–18	10.0	11.7	516.5	55.6	–3	–10
Cabot	391.9	15.4	2	117	3.9	1.9	1,218.3	47.8	4	5
Crompton & Knowles	134.0	11.5	2	14	8.6	7.6	415.5	39.5	9	46
Dow Chemical	2,988.0	139.0	–7	–9	4.7	4.7	13,555.0	690.0	–5	32
Ethyl	486.9	29.8	6	34	6.1	4.8	1,451.7	87.0	19	32
First Mississippi	113.3	0.8	10	–54	0.7	1.7	341.3	2.6	–8	–50
H. B. Fuller	252.2	8.8	6	–15	3.5	4.3	727.5	20.6	4	–22
Georgia Gulf	199.6	11.4	0	5	5.7	5.5	576.7	32.7	–1	–13
BF Goodrich	500.8	17.2	–23	537	3.4	0.4	1,330.0	20.1	–30	63
W. R. Grace	1,136.1	63.6	8	13	5.6	5.3	3,216.4	149.2	9	16
Great Lakes Chemical	469.7	68.5	28	14	14.6	16.4	1,361.7	202.8	25	18
Hercules	676.0	51.5	–5	27	7.6	5.7	2,058.7	150.1	–5	24
IMC Fertilizer	266.4	–18.4	21	def	def	8.4	745.1	–35.0	–3	def
Imcera	444.9	35.3	7	28	7.9	6.6	1,383.2	108.2	5	5
International Flavors	298.7	49.6	2	1	16.6	16.9	929.1	166.8	7	8
Loctite	153.4	16.3	–4	–24	10.6	13.5	460.6	53.4	0	–19
Lubrizol	390.8	27.1	8	42	6.9	5.2	1,148.6	93.9	–4	–13
Monsanto	1,849.0	95.0	–2	107	5.1	2.4	6,020.0	436.0	2	–1
Morton International	619.6	42.9	15	23	6.9	6.5	1,848.1	131.8	16	19
Nalco Chemical	354.0	38.7	1	11	10.9	10.0	1,040.5	111.9	2	7
Olin	606.8	5.0	5	–15	0.8	1.0	1,824.2	31.0	0	–39
Petrolite	92.6	5.2	18	28	5.6	5.2	258.7	15.2	9	29
Praxair	608.0	36.0	–7	9	5.9	5.1	1,825.0	107.0	–7	11
Rohm and Haas	799.0	29.0	–1	–43	3.6	6.3	2,509.0	150.0	9	–18
Stepan	111.1	3.2	1	–17	2.9	3.5	336.3	11.2	2	–3
Union Carbide	1,130.0	38.0	–9	73	3.4	1.8	3,567.0	121.0	–3	21
Witco	540.6	22.9	27	21	4.2	4.4	1,643.2	62.7	29	12
TOTAL	**$18,578.3**	**$1,037.8**	**0%**	**5%**	**5.6%**	**5.3%**	**$61,216.4**	**$3,752.8**	**1%**	**4%**

a Earnings from continuing operations, excluding significant nonrecurring and extraordinary items. b After-tax income as a percentage of sales. c Includes discontinued operations. **def** = deficit.

creased 13% to $3.47 billion, despite a 19% decline in sales to $71.5 billion. For these companies, the profit margin increased to 4.8% from 3.5% in last year's third quarter.

For nine diversified companies with significant chemical operations, earnings were essentially unchanged from last year's third quarter, at $1.25 billion, on a 4% sales decline to $22.7 billion, providing a cumulative profit margin for the group of 5.5%, compared with 5.3% in the comparable three months of 1992.

The good news for the chemical companies is that the increase in the third quarter puts them, in total, solidly on the plus side for the first nine months of the year. In the January through September period, the 30 chemical companies posted total sales of $61.2 billion, up 1% from the same period in 1992. Earnings for the group increased 4% in the first three quarters to $3.75 billion. As a result, the chemical companies' profit margin increased to 6.1% in the first nine months of this year from 5.9% in the comparable period of 1992.

Despite the improvement in earnings, chemical company executives are still concerned about weak overseas economies and what to do about them. At Dow Chemical, executive vice president Enrique C. Falla, says, "Business conditions remain difficult, especially in Europe, and require even greater focus being placed on our quality and productivity initiatives. It is gratifying to report that the response of the organization to today's challenges has resulted in the reduction of research, promotion, selling, and administrative expenses and interest charges by more than $200 million compared with 1992. These productivity improvements will continue."

Air Products & Chemicals chairman H. A. Wagner points out: "Our operating performance reflected higher overall results in our industrial gas and chemical segments, despite a significant deterioration in European profits due to currency and weak business conditions."

Also concerned about the state of the European economies, W. R. Grace president and chief executive officer J. P. Bolduc says, "Although operating earnings were reasonably ahead of the year-ago period, we are concerned with the

NINE-MONTHS 1993		12-MONTH RUNNING DATA			
Profit margin[b]		Change from 1992		Profit margin[b]	
1993	1992	Sales	Earnings	1993	1992
8.2%	8.4%	3%	2%	8.3%	8.4%
8.1	8.0	–2	3	7.6	7.2
6.6	8.9	2	–16	6.4	7.8
10.8	11.6	–2	–6	11.0	11.5
3.9	3.9	4	–4	3.7	4.0
9.5	7.1	13	20	9.0	8.5
5.1	3.7	–2	–24	3.0	3.8
6.0	5.4	23	32	7.8	7.3
0.8	1.4	–7	–62	0.6	1.4
2.8	3.8	6	–12	3.2	3.9
5.7	6.4	1	–15	5.4	6.5
1.5	0.6	–14	def	0.6	def
4.6	4.4	–6	9	4.5	3.9
14.9	15.7	24	25	14.9	14.9
7.3	5.6	–4	25	6.9	5.3
def	5.9	–8	def	def	6.7
7.8	7.8	5	10	7.5	7.1
18.0	17.7	8	9	17.0	16.9
11.6	14.2	1	–8	12.0	13.2
8.2	9.1	–4	–18	7.4	8.6
7.2	7.5	–9	15	5.8	4.6
7.1	6.9	13	15	7.0	6.9
10.8	10.3	4	8	10.9	10.4
1.7	2.8	–2	–39	1.5	2.5
5.9	4.9	6	9	5.5	5.3
5.9	4.9	–5	8	5.5	4.8
6.0	7.9	10	–14	5.7	7.3
3.3	3.5	2	–7	3.3	3.6
3.4	2.7	–2	190	3.0	1.0
3.8	4.4	29	–2	3.5	4.5
6.1%	**5.9%**	**0%**	**1%**	**5.4%**	**5.4%**

impact of continued European weakness on most of our specialty chemicals businesses. We have no intention of simply waiting for improvement in the European economies to favorably impact our results. Rather, all of these businesses are focused on reducing costs in Europe, as well as in the more mature markets in North America. We are also continuing to aggressively pursue opportunities in newly developing markets."

The theme of cost cutting to counter weak economies is pervasive in the company statements. Thomas L. Gossage, chairman, president, and chief executive officer at Hercules, says, "The third-quarter results again demonstrate our commitment to profit margin improvement. In a difficult economic environment, gross profit margins were up again while indirect expense (selling, general, and administrative expense and research and development) continued to decline."

DuPont, which took a massive restructuring charge in the third quarter, believes it is bringing its operations into line. "Although much of the bottom-line impact continues to be masked by poor economic conditions in Europe and Japan, we have made significant progress in every area of transformation that we have undertaken during the past two years," says chairman Edgar S. Woolard Jr. "We have made extraordinary and difficult changes, including job reductions, a reorganization of our businesses, divestitures, and major fixed cost and spending reductions. We will continue to pursue our objectives aggressively and make our businesses healthy within the time frame we have set for ourselves."

In terms of product categories, both petrochemicals and fertilizers remain weak. The best measurement of petrochemicals is chemical earnings at oil companies. For a group of five oil companies that have significant chemical operations—Amoco, Chevron, Exxon, Mobil, and Occidental Petroleum—chemical earnings declined 6% to $221 million. However, although chemical earnings were down at three (Amoco, Exxon, and Mobil), they were up at the other two (Occidental and Chevron).

Chevron, whose chemical earnings improved to $15 million, excluding special charges, from a loss of $9 million in third quarter 1992, notes that despite that increase, the petrochemicals industry continues to be plagued by oversupply.

Although Chevron is typical of the oil companies in complaining about oversupply in petrochemicals, Mobil, where chemical earnings fell to $9 million from $24 million in last year's third quarter, is more specific in noting weakness worldwide in polyethylene and films due to oversupply and sluggish economies.

Occidental, whose chemical earnings increased to $43 million in the third quarter from $29 million in last year's third quarter, says that operating earnings improved as a direct result of lower manufacturing and administrative costs. However, the company notes, although 1993 volumes improved, margins for most products were lower because of competitive pricing.

Fertilizers also were trouble spots. For instance, among fertilizer producers, First Mississippi's already depressed earnings declined 54% to a barely profitable $800,000, and IMC Fertilizer suffered an $18 million loss in the quarter.

At IMC Fertilizer's annual meeting, Wendell F. Bueche, president and chief executive officer, was harsh in his assessment of the marketplace and especially prices, which he noted were at 20-year lows. "During the past several months, we have experienced a marketplace characterized by pricing at ri-

Ground rules for C&EN earnings analysis

C&EN's quarterly report on financial performance of the U.S. chemical industry contains data from the 30 largest U.S. basic chemical companies and from 20 oil and diversified companies, each with more than $200 million in annual chemical sales, plus 10 pharmaceutical companies.

To be included in the table of basic chemical producers, a company must have at least 50% of its sales in chemicals. That is why DuPont, for example, is included in the table of diversified manufacturers.

In referring to chemical sales, C&EN means those chemicals whose molecular composition has been changed in the course of manufacture. Hence, chemical sales include those of traditional categories of basic petrochemicals and inorganics, organic intermediates and inorganic compounds, polymers such as plastics and fibers, and agricultural chemicals and specialty derivatives.

Third-quarter earnings rise at oil and drug firms, but not at diversified firms

	THIRD-QUARTER 1993						NINE-MONTHS 1993					
	Sales	Earnings[a]	Change from 1992		Profit margin[b]		Sales	Earnings[a]	Change from 1992		Profit margin[b]	
	($ millions)		Sales	Earnings	1993	1992	($ millions)		Sales	Earnings	1993	1992
OIL AND GAS COMPANIES												
Amoco	$ 7,220.0	$ 446.0	0%	–2%	6.2%	6.3%	$ 21,388.0	$ 1,276.0	2%	38%	6.0%	44.0%
Ashland	2,653.2	48.5	–6	306	1.8	0.4	7,327.5	90.7	–1	438	1.2	0.2
Chevron	9,200.0	565.0	–11	38	6.1	4.0	28,200.0	1,633.0	–3	61	5.8	3.5
Exxon	17,920.0	1,360.0	–42	19	7.6	3.7	83,134.0	3,780.0	–4	11	4.5	4.0
Kerr-McGee	819.2	18.8	–4	–35	2.3	3.4	2,448.5	76.9	–3	4	3.1	2.9
Mobil	15,819.0	613.0	–3	40	3.9	2.7	47,016.0	1,622.0	1	79	3.4	1.9
Occidental Petroleum	1,916.0	–46.0	–10	def	def	4.6	6,096.0	112.0	–1	0	1.8	1.8
Phillips Petroleum	3,170.0	56.0	2	–5	1.8	1.9	9,429.0	250.0	7	108	2.7	1.4
Sun Co.	2,384.0	61.0	–20	259	2.6	0.6	7,127.0	138.0	139	def	1.9	def
Texaco	8,479.0	255.0	–13	–25	3.0	3.5	25,441.0	848.0	–6	19	3.3	2.6
Unocal	1,963.0	91.0	–22	40	4.6	2.6	6,379.0	277.0	–16	94	4.3	1.9
TOTAL	$71,543.4	$3,468.3	–19%	13%	4.8%	3.5%	$243,986.0	$10,103.6	–1%	36%	4.1%	3.0%
DIVERSIFIED MANUFACTURERS												
AlliedSignal	$ 2,822.0	$ 168.0	–4%	24%	6.0%	4.6%	$ 8,778.0	$ 487.0	–2%	23%	5.5%	4.4%
DuPont	9,231.0	355.0	–5	–6	3.8	3.9	27,847.0	1,364.0	–3	25	4.9	3.8
Eastman Kodak	4,077.0	260.0	–4	–1	6.4	6.2	11,884.0	658.0	–2	7	5.5	5.1
Ferro Corp.	263.7	15.0	0	1	5.7	5.6	800.4	41.7	–1	–2	5.2	5.3
FMC	926.5	45.7	–5	–15	4.9	5.5	2,807.5	192.3	–6	–14	6.8	7.5
3M	3,481.0	316.0	–2	–2	9.1	9.1	10,538.0	977.0	0	3	9.3	9.0
NL Industries	202.1	–18.7	–13	def	def	def	622.0	–48.4	–10	def	def	def
PPG Industries	1,405.4	76.1	–2	15	5.4	4.6	4,375.7	241.1	–1	–4	5.5	5.7
Vulcan Materials	331.5	36.6	6	2	11.0	11.4	851.5	67.7	5	–4	7.9	8.7
TOTAL	$22,740.2	$1,253.7	–4%	0%	5.5%	5.3%	$ 68,504.1	$ 3,980.4	–2%	10%	5.8%	5.2%
PHARMACEUTICAL COMPANIES												
Abbott Laboratories	$ 2,060.4	$ 316.2	5%	13%	15.3%	14.2%	$ 6,179.8	$ 1,007.8	7%	13%	16.3%	15.5%
American Home Products	2,168.1	397.6	3	4	18.3	18.1	6,188.5	1,086.6	5	38	17.6	13.4
Baxter International	2,228.0	135.0	5	–9	6.1	7.0	6,484.0	324.0	5	–16	5.0	6.3
Bristol-Myers Squibb	2,862.0	608.0	–28	6	21.2	14.5	8,419.8	1,703.3	1	8	20.2	19.0
Eli Lilly	1,530.6	294.4	4	def	19.2	def	4,651.6	1,014.7	3	96	21.8	11.4
Merck	2,544.1	705.7	3	11	27.7	25.8	7,497.4	1,492.0	6	–19	19.9	26.0
Pfizer	1,872.5	310.8	2	4	16.6	16.3	5,488.5	893.5	4	10	16.3	15.5
Schering-Plough	1,061.9	199.4	4	14	18.8	17.1	3,274.9	636.1	7	15	19.4	18.0
Upjohn	899.9	153.0	1	5	17.0	16.3	2,747.4	431.0	4	6	15.7	15.4
Warner Lambert	1,478.5	155.9	3	–5	10.5	11.4	4,259.9	526.9	3	4	12.4	12.3
TOTAL	$18,706.0	$3,276.0	–3%	29%	17.5%	13.1%	$ 55,191.9	$ 9,115.9	5%	10%	16.5%	15.7%

a After-tax earnings from continuing operations, excluding significant extraordinary and nonrecurring items. b After-tax earnings as a percentage of sales. def = deficit.

diculous levels, oftentimes below direct cost. This is a formula for self-destruction of a business and, indeed, of an industry," he said.

In announcing the company's quarterly results, Bueche continued the theme in looking ahead at his company's fiscal year, which will end June 30, 1994. He notes some modest improvements in the quarter, including higher prices in some areas—although prices were still below year-earlier levels; increased fertilizer purchases by China; and anticipated increased domestic demand. "Nevertheless," he cautions, "despite these promising developments, IMC Fertilizer will not be profitable for fiscal 1994 unless there is significant price improvement."

In spite of the problems in petrochemicals and fertilizers and, indeed, of the entire chemical industry trying to cope with sluggish worldwide demand, chemical executives are sure that the cost-cutting measures that they have been making will pay off. This attitude is summed up by Praxair's chairman and chief executive officer, H. William Lichtenberger: "Looking ahead, actions being taken to better serve customers, improve operations, and reduce corporate overhead, together with higher operating rates and stabilizing pricing trends in the U.S., are providing the foundation for future earnings growth." □